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ABSTRACT

This paper explores the effective implementation of process-based models of library instruction through analysis of a Canadian process model, Alberta's Focus on Research model. The following stages and related skills of the Focus on Research model are summarized: (1) planning (establish topic, identify information sources, identify audience and presentation format, establish evaluation criteria, and review process); (2) information retrieval (locate resources, collect resources, and review process); (3) information processing (choose relevant information, evaluate information, organize and record information, make connections and inferences, create product, revise and edit, and review process); (4) information sharing (present findings, demonstrate appropriate audience behavior, and review process); and (5) evaluation (evaluate product, evaluate research procedures and skills, and review process). Overall themes in teaching the research process are discussed, including: developing emotional literacy; investing time in exploration; supporting students during their work; the teaching role of the librarian; and understanding the process approach. (Contains 25 references.) (MES)

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Teaching the research process - for discovery and personal growth

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Abstract

The research process is one of the ways in which children and young adults can experience the school library as a place for discovery and growth. In order for students to have those experiences through the research process, teachers and librarians need to provide instructional guidance that is affective as well as cognitive in focus. Teachers and librarians need to have a deep understanding of how learners experience the research process and about how learning through research can be facilitated. In the past two decades, process models of library instruction have been developed in many parts of the world including the United Kingdom, the United States, Australia, and Canada. Process-based models of library instruction support a view of library research as an opportunity for students to experience discovery and personal growth. However, the effective implementation of such models depends on teachers and librarians understanding that students vary in the level of abstraction that they can handle, that students are active learners building or constructing their knowledge as they use information and that students are experiencing changes in feelings as well as changes of thoughts as they use information. This issue is explored through an analysis of a Canadian process model, Alberta's Focus on Research model, using research related to the implementation of this and similar models in primary, middle, and secondary schools.

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Introduction

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Process-based models of library instruction support a view of library research as an opportunity for students to experience discovery and personal growth. When implemented effectively, student learning through library research is characterized by exploration and risk-taking, by curiosity and motivation, by engagement in critical and creative thinking, and by connections with real life situations and real audiences (AASL, 1999; Bush, 1998; Harada, 1998).

What is regarded as exemplary library instruction has changed over the past thirty years: a source approach, during the 1960s and 1970s; a pathfinder approach, through the 1980s; and a process approach, now in the 1990s. The process approach to teaching the research process emphasizes thinking about information and using information within a problem-solving perspective. It does not discard the knowledge from earlier approaches, such as the knowledge of tools, sources, and search strategies but it does emphasize that this knowledge is to be developed within the teaching of thinking and problem solving.

The process approach goes beyond the location of information to the use of information, beyond the answering of a specific question to the seeking of evidence to shape a topic. It considers the process of a search for information as well as the product of the search. It calls for an awareness of the complexity of learning from information: learning from information is not a routine or standardized task, and it involves the affective as well as the cognitive domains.

The process model is theory-based and grounded in research from the fields of education and of library and information studies (LIS). From education, comes learning theory and from LIS, information seeking behavior theory. For example, from education comes the knowledge that learners vary in the level of abstraction that they can handle, depending on their cognitive development and their prior knowledge and experience. From education comes also the constructivist concepts of learners actively building or constructing their knowledge and of learners experiencing changes in feelings as well as changes of thoughts as they use information. From LIS comes the knowledge that users of information progress through levels of question specificity, from vague notions of information need to clearly defined needs or questions, and that users are more successful in the search process if they have a realistic understanding of the information system and of the information problem.

The Alberta Model for Teaching the Research Process

There are many process-based models of library instruction. In Britain, we see the work of Ann Irving, Michael Marland and James Herring; in the United States, we see the work of Carol Kuhlthau, Barbara Stripling and Michael Eisenberg. This work is reflected in the model for teaching the research process developed by the provincial ministry of education, Alberta Education. The foundation for that was laid down in Alberta Education policy in the 1980s:

> Students in Alberta schools should have access to an effective school library program integrated with instructional programs to provide improved opportunities for student achievement of the Goals of Basic Education for Alberta. (Alberta Education, 1985)

Based on that policy, a program delivery model was developed called *Focus on Learning* (Alberta Education, 1985) which emphasized the instructional role of the school library and the teacher-librarian. However, as schools used the *Focus on Learning* document, it became evident that more guidance was required for library instruction, particularly in the area of teaching students how to do research. The result was *Focus on Research* (Alberta Education, 1990), an instructional model, developed because of teacher and teacher-librarian demand. (Sadly, the momentum generated by these initiatives has been lost in the province as a result of a change in government and a change in political philosophy. The ministry of education has been downsized, in line with the government stance that the ministry establishes broad policies and goals only, that it never specifies the means by which school districts achieve these

policies and goals. As a result, official support has been removed from the school library policy and program delivery model, the provincial school library consultant posiition has been eliminated, and school district consultants have disappeared.)

Focus on Research is a five-stage model, with one element common to each of the stages, Review the Process (see Figure 1). There are many powerful strategies that teachers and teacher-librarians may use to help make library research an opportunity for discovery and personal growth. Below, I suggest some strategies for guiding learners through the research process, for each of the five stages in the *Focus on Research* model and for the element, Review the Process. In this section of the paper, I have used the term 'teachers' to refer to both classroom teachers and teacher-librarians, working in collaboration with the students in the classroom and the library.

Figure 1

Focus on Research: A Process Approach

STAGES	SKILLS
Planning	• Establish Topic • Identify Information Sources • Identify Audience and Presentation Format • Establish Evaluation Criteria • Review Process
Information Retrieval	• Locate Resources • Collect Resources • Review Process
Information Processing	• Choose Relevant Information • Evaluate Information • Organize and Record Information • Make Connections and Inferences • Create Product • Revise and Edit • Review Process
Information Sharing	• Present Findings • Demonstrate Appropriate Audience Behavior • Review Process
Evaluation	• Evaluate Product • Evaluate Research Procedures and Skills • Review Process

Throughout: Review the Process

Reviewing the Process is a critical element for helping students to understand research as a learning process and to develop their metacognitive abilities, for both 'thinking about thinking' and for 'thinking about feeling.' Work on metacognition began with Vygotsky in the 1920s. Metacognition encompasses all the thinking that we do to evaluate our own mental processes and to plan for appropriate use of these processes to meet the demands of the situation. Metacognitive knowledge includes knowledge of person, task, and strategy, that is, knowledge of one's capacity to learn, about the nature of what is to be learned, and about actions that one can take to aid one's thinking (Flavell, 1979). Work on helping students to develop their abilities to think about, evaluate and monitor their feelings began much later, in the the 1970s. Thinking about feeling, termed "emotional literacy" (Toben, 1999) or "emotional intelligence" can be defined as:

> The ability to perceive, access, and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth. (Slavoney & Sluyter, 1997)

Young students, in primary school, for example, are less likely to have developed these metacognitive and emotional abilities but they can be helped to do so, within the limits of their intellectual and emotional maturation. Older students as well need to be helped to understand their feelings as well as their thinking as they work through the research process. McGregor (1994) found that even bright high school seniors need assistance in learning to think about their thinking, while Loerke (1992) pointed out that graduate students may be unaware that feelings of confusion and frustration are a natural part of the research process.

When teachers pose questions about thinking and feeling and allow students to reflect upon their learning progress, students' personal growth is enhanced. Students' motivation to learn is also enhanced when such activities honour diverse learning styles and perspectives. Teachers should use a model of the research process on a consistent basis and explicitly call the students' attention to the model and to the particular stage at which they are working. Other useful strategies for reviewing the process include class discussions, journal writing, and making timelines as well as ongoing and retropective analyses of the data generated through such activities.

Stage 1: Planning

In the Planning stage, students are given the opportunity to get an image of the whole research process; getting a sense of the project as a whole supports student success. Engaging students in the planning stage is crucial. Even with the youngest researchers, teachers can have them identify what they know and what they want to know about the topic, generate ideas about potential information sources, and discuss potential audiences and evaluation criteria for their work.

Topic selection is an important task for students in this stage. To do research well, the students have to be knowledgeable about the topic and the topic has to be an appropriate level of abstraction. Having a good understanding of the topic will allow the students to develop research questions or categories for investigation. Young or inexperienced researchers are more able to handle general knowledge topics where the emphasis is on fact-finding and organization of ideas. Junior high or middle school students are just beginning to be able to handle the abstract reasoning involved in focussing or narrowing a topic or for developing a position paper (Loerke, 1994). High school students can develop and support a thesis statement if they have had good research experience in earlier years.

Teachers generally will have planned the assignment and its parameters long before the students begin their work on the assignment. Teachers should be looking for topics that students will find personally compelling and that students can connect to the out-of-school world (Tallman, 1998). For complex topics or for assignments where students are given wide choices, this means a repeat or cycling of the first two stages of the research process so that students have the opportunity to do general reading, to assess sources of information, and to develop their interest and focus. Focus on Research and many other research models give little attention to the complexity of this initial stage (Anderson, 1994). Careful and thoughtful work is needed here to ensure that topics and research questions require high level thinking skills and that they will challenge students and engage their interest and curiosity. Students feel more positive towards investigative activities when they are involved in choosing or developing research topics; unfortunately there is some evidence that students in the senior grades may have less involvement in topic and question generation than do younger students (Gross, 1997).

Stage 2: Information Retrieval

In the Information Retrieval stage, students obtain the sources of information needed. If students are young or inexperienced or if information on the topic is very hard to access, a stations approach, organizing the materials by format or media, is often effective. Knowledge of information tools and systems and of search strategies (source and pathfinder approaches) is critical if the students are finding their sources independently.

Students may experience information overload during this stage (Akin, 1998). Teachers should be alert to the feelings and physical outlets that may characterize information overload--anger, frustration, fatigue, irritability, leg jiggling or swearing-and help students to recognize these signs of overload. In addition to helping students understand that such feelings are not an unusual part of the research process, teachers should help students to identify useful strategies such as omission or filtering (ignoring or selecting certain categories of information), generalizing or twigging (broadening or narrowing the topic), or asking for help. Whole class or small group activities related to getting a large picture of the topic and its sub-categories, such as concept-mapping, or deciding what kinds of information might be appropriate for the topic are helpful strategies for the information retrieval stage, especially when information overload is a problem.

Stage 3: Information Processing

In the Information Processing stage, students select and synthesize information pertinent to their topic. This is really a two-phase stage. After selecting and recording pertinent information, the students create a research product by organizing and synthesizing their information in a unique and personal way. Here is where the time invested in planning pays off; students who do not have a clear understanding of their topic (a topic focus) cannot select pertinent information.

In the first phase, recording information, students need to be helped to take notes in some format. The format should be provided for inexperienced researchers. This should be a search for pertinent information, for information that will answer their questions or fit into their subtopics, not writing down everything they can find. This is often where electronic resources or the photocopy machine can actually be a detriment to the process.

In the second phase, creating information, students organize and synthesize their information. Having students talk before writing also can help them express their ideas in their own words. The Focus on Research model is somewhat biased toward the written report, but other media such as charts and multimedia productions also need revision (and instruction if the media is new to the student).

Stage 4: Information Sharing

In the Information Sharing stage, the students present the research product in a way that is meaningful for a particular audience. There is also opportunity for the students to consider the role of the audience members in enhancing the sharing experience. The audience, preferably a wider audience than just the teacher, should have been identified in the Planning stage so that the shaping of the sharing mode is possible. For young or inexperienced researchers, small group sharing is often more successful and more time efficient than sharing with the whole class.

Stage 5: Evaluation

In the Evaluation stage, the emphasis is on involving the students in the assessment of the process as well as the product of the research. The emphasis may at times be on assessing the students' understanding of the process or of the content. Evaluation need not be summative. Some of the worst abuses of research as a learning experience grow out of an emphasis on creating the product; with the focus on the final product, students may simply become more skillful in plagiarizing (McGregor, 1995). Assessing the process may take the form of students

creating a flow chart of the research process. Another alternative is having students prepare a written or oral summary of what they have learned about the process, or what content they have learned through the process. Having middle grade students write a letter to their parents can be very effective way of having students identify and assess their own learning. Students who are mentored in metacognitive awareness show growth in both content knowledge and search strategies.

Teaching the Research Process: Overall Themes

Developing emotional literacy

The process approach emphasizes the affective as well as cognitive aspects of the process. Students need to be helped to recognize as natural the waves of optimism and frustration that accompany complex learning (Kuhlthau, 1993). They also need to be aware of and have coping strategies to address such common phenomena as library anxiety and information overload. The point here is not to try to have only positive feelings or to eliminate negative feelings but to recognize them as normal parts of learning, to understand them, and to regulate them. Students who understand that their feelings are not unique but shared by others are less likely to be overwhelmed by them.

Investing time in exploration

The problem solving emphasis of the process approach means a shift in the way we think about and use time. More time is needed in early stages of the process for exploration, for building content knowledge, for developing a personal interpretation or focus. This is not a waste of time but time well-invested in developing students' interest in and commitment to the topic being researched. Steeves (1994) found that even very young researchers in Grades 1 and 2, given the opportunity for lengthy and rich exploration of a topic, could develop a clear understanding of the research process as well as producing unique and original research products. Her young researchers, investigating Insect Life, spend almost half of their research time in this early exploration stage, reading and talking about insects, hearing stories and singing songs about insects, watching videos about insects and going on a bug walk in the school yard. They were immersed in their topic, in ways that engaged both the affective and cognitive domains. Their interest and commitment to finding out about insects was deep enough to sustain them when they faced the challenges of finding answers to the questions that they had generated. Garland (1995) found that older students were more interested on their research topics if they had solid background knowledge in the topic area and could see the purpose of the research and its connection to their other school work.

Supporting students during their work

The staged model suggests that students might experience different feelings, thoughts, and actions at each stage. This also calls for different kinds of teacher and teacher-librarian involvement or mediation at the various stages in the process. Teachers found that students taught using a research process approach, where the investigative work was integrated with the curriculum, found the students became "more creative, more positive, more independent" (Kühne, 1995, p.25). This was true for poorer students as well as for the stronger students, although the poorer students needed more individual attention during the process. Todd (1995) suggests that teachers and librarians think about their work with students as a conversation, an active interchange through which meaning is constructed. This interchange is discursive, adaptive, interactive and reflective. Students are encouraged to talk about their knowledge and teachers and librarians enter into this conversation with suggestions on how the student can move forward, see things from new perspective, make connections between previous and new knowledge, and see the patterns of their learning.

Teaching role of the librarian

Some librarians are reluctant to take an active teaching role in working with teaching collegues in schools but, without taking up that teaching role, models of library instruction are not likely to change (Hazelwood, 1994). A research process model is difficult to implement fully even when there is a knowledgeable teacher-librarian and a school policy that supports the constructivist philosophy of learning that underpins the model. Teachers who have worked collaboratively with librarians were impressed by the creative and imaginative learning experiences that resulted from cooperative planning with teacher-librarians and thought teacher-librarians needed to be more assertive in inviting teachers to engage in cooperative planning (Sweeney, 1994).

Understanding the process approach

Even teachers and librarians who are aware of the process models sometimes believe they are implementing their model but actually are leaving out the aspects that in fact are critical to the success of the model. For example, Holland (1994) found that teachers' implementation of the Focus on Research model was hampered by their limited understanding of the model, particularly in relation to the critical importance of Reviewing the Process. A statement in the Focus on Research document suggesting that a research activity need not include all stages and skills seemed to have been taken to mean that important aspects of the model such as involving students in Planning and in Reviewing the Process could be omitted entirely. Tastad and Collins (1997) also found that implementing process approaches is difficult in schools where the teaching practices and curriculum do not support a process or constructivist approach.

Conclusion

Teaching the research process in ways that respect the interests and needs of young people is a complex and fascinating educational task, one that demands the very best of our knowledge and skills as teachers and librarians. An enormous amount of research has been conducted over the past two decades that can contribute to this work with young people. The research on affect and its relation to learning is being done in both of the fields from which we draw the theories that guide our work in teaching the research process, the fields of education and of library and information studies. Affect involves pleasure, engagement, motivation, imagination, participation in community, and acknowledgement of other voices. These elements provide the energy that keeps young people engaged in inquiry-based activities. Absence of affective reward is a key element in alienation from learning and from schooling.

We as teachers and as librarians need to keep abreast of this growing body of research and we need to use it to reflect upon and improve our practice on an ongoing basis. Without a deep understanding of the process approach to library research, we are likely to continue traditional practices, some of which push learners to "get to work" too early and prevent them from developing a personal perspective and motivation for learning through investigation, that is, prevent them from experiencing the research process as an opportunity for discovery and personal growth.

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